



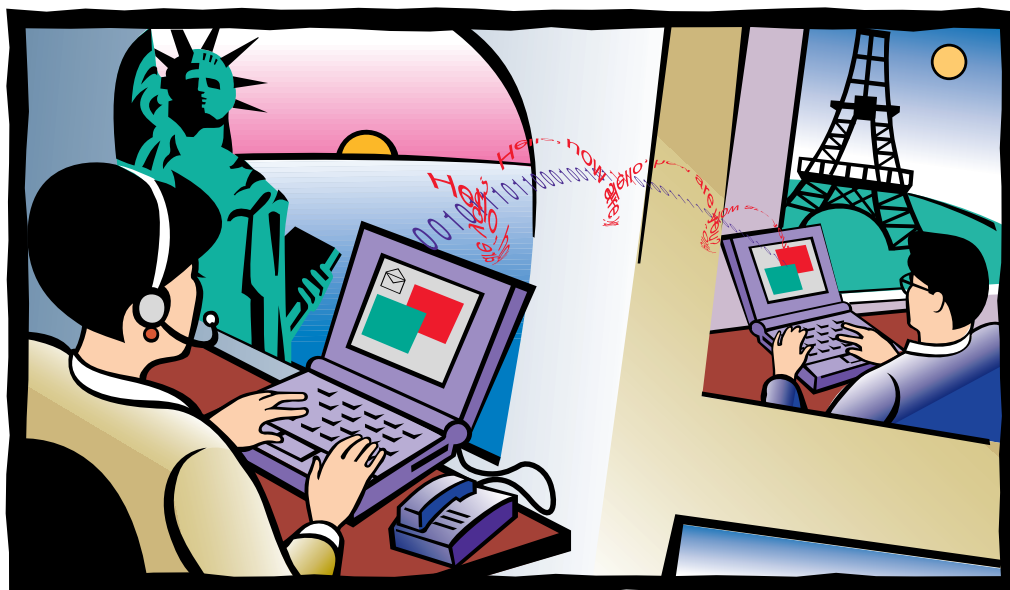
Modems

So fast and versatile, you can work anywhere.

Modems are available today as integrated notebook components or as add-in PCMCIA cards. They have become standard equipment for mobile and non-networked PC users for exchanging email, sharing files and applications, and accessing the Internet. They are currently capable of transmitting data at speeds of 28.8 Kbps and higher, and will soon handle data and voice simultaneously. Although the most commonly found modems require phone lines, wireless modems are gaining rapidly in popularity.

User Benefits:

- Higher data throughput resulting in reduced waiting time and lower phone charges
- Low power consumption even with high-speed PCMCIA modems
- Wireless modems eliminate the need to find a phone jack



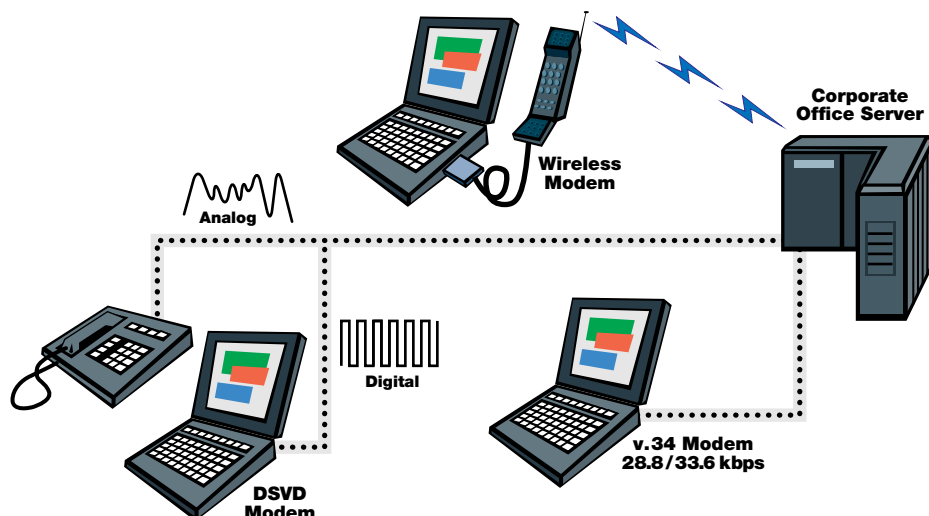
The latest technological advances in modems have made it more convenient for mobile professionals to work on the road and at home. With data transmission rates surpassing 28.8 Kilobits per second (Kbps), Internet access and the exchange of files and email is much faster.

Two significant modem technology developments are Digital Simultaneous Voice and Data (DSVD) modems and wireless modem transmission. DSVD is an open industry standard for sharing voice and data simultaneously over a single analog phone line. Rapidly being implemented by the industry, DSVD eliminates the need for two separate phone lines — one for voice and one for data. It makes collaborative PC applications, such as personal video conferencing, or sharing of files possible. Remote users will benefit from this technology, for example, a technical support organization would be

able to access a user's notebook remotely, while simultaneously discussing and diagnosing the problem over the same phone line.

Wireless technologies continue to progress as well. High speed cellular transmission rates up to 14.4 Kbps, enables fast access to the corporate enterprise and to the Internet. What's more, today's wireless infrastructure provides coverage throughout the U.S., so you no longer need a phone jack to stay in contact with the office.

Industry acceptance of the V.34 international specification for 28.8 Kbps and 33.6 Kbps modems ensures compatibility between these high-speed modems and their lower-speed predecessors. Another benefit of this standard is the automatic maximization of throughput for each specific line being used.



How Do Today's Modem Technologies Work?

DSVD is one of today's modem technologies being implemented at a rapid pace. It converts the analog voice signal into digital format, compressing it to one-eighth its original size. This stream of digital data then is combined with the other data that is being sent over the modem, and transmitted simultaneously over a single line. The process is then reversed at the other end with a compatible DSVD modem. Using, DSVD, normal conversations can be held while files are being transferred, a user can control another user's machine with a "helper" application, or a trainer can conduct a remote training presentation.

Standards have improved over time to accelerate the speed and quality of modem transmission. The V.34 standard is the latest. It includes a feature called line probing that allows the modem to identify the capacity and quality of the phone line being used and adjust the transmission for maximum throughput. Modems that adhere to the V.34 specification are the first to identify themselves to telephone network equipment with a handshaking process, which optimizes transmission.

The V.42bis specification used by 28.8 Kbps and 33.6 Kbps modems also helps speed throughput by compressing data on the fly at a ratio of up to 4 to 1. This yields file transfer speeds of up to 155,600 bps on a 28.8 Kbps modem. The V.42bis specification even provides for a built-in feedback mechanism so the modem can monitor its own performance and intelligently determine if a performance improvement can be gained by activating compression.

Another important modem technology is wireless transmission. This allows a user with a notebook and cellular phone to send cellular transmissions simply by adding a connector and software. The most common options for transmitting data wirelessly are Cellular Circuit-Switched Data (CCSD) technology, which is similar to landline phone transmission but without the wire, and Cellular Digital Packet Data (CDPD) technology which divides up data so it can be sent in short economical bursts. CCSD is the preferred option for transferring large files and faxes, while CDPD is best suited for users who send frequent, short messages.

Technology Highlights:

- International standard transmission rates of 28.8 Kbps
- DSVD technology makes possible simultaneous transmission of voice and data on a single analog phone line
- Wireless technology frees mobile modem users from phone lines
- Compatibility guaranteed through international standards known as V.34 and V.42bis specifications

For more information on modems, please access Intel's home page on the World Wide Web at:

<http://www.intel.com/>

For more specific information on mobile technologies for modems, please refer to the following web site:

<http://www.intel.com/procs/mobile>

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